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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte JOHN E. DOLAN and JOHN C. DALRYMPLE

Appeal 2008-1577
Application 09/823,372
Technology Center 2600

Decided: October 29, 2008

Before JOSEPH F. RUGGIERO, MAHSHID D. SAADAT,
and JOHN A. JEFFERY, *Administrative Patent Judges*.

RUGGIERO, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellants appeal under 35 U.S.C. § 134 from the Final Rejection of claims 2-15, 17, 18, 20-28, 34, and 40. Claims 1, 16, 19, 29-33, and 35-39 have been canceled. We have jurisdiction under 35 U.S.C. § 6(b).

Appellants' invention relates to an imaging system for sensing an object and, in particular, to the determination of the boundaries of a document (Spec. 1)

We affirm.

Claim 40 is illustrative of the invention and reads as follows:

40. An imaging system for sensing an object, said imaging system comprising:

(a) an image sensor;

(b) a backing having a surface opposed to said sensor; and

(c) an image processor having a plurality of stat buffers and that analyzes candidate edges for bounding regions and identifies shadows cast by an object adjacent said backing as edges of a bounding region based, at least in part, on:

(i) a variable luminance threshold value automatically calculated using one or more statistical measures and that causes detection of shadows cast by said object on said backing; and

(ii) the presence of detected said shadows in a contiguous plurality of stat buffers.

The Examiner relies on the following prior art references to show unpatentability:

Ichihara	US 5,198,853	Mar. 30, 1993
Yamanishi	US 5,696,595	Dec. 9, 1997
Kowalski	US 5,778,104	Jul. 7, 1998
Feng	US 6,046,828	Apr. 4, 2000

Claims 2, 3, 12, 14, 15, 17, 18, 20, 21, 24, 25, 28, 34, and 40 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ichihara in view of Feng.

Claims 4-8 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ichihara in view of Feng and Yamanishi.

Claims 9-11, 13, 22, 23, 26, and 27 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Ichihara in view of Feng and Kowalski.

Rather than reiterate the arguments of Appellants and the Examiner, reference is made to the Briefs and Answer for the respective details. Only those arguments actually made by Appellants have been considered in this decision. Arguments which Appellants could have made but chose not to make in the Briefs have not been considered and are deemed to be waived [see 37 C.F.R. § 41.37(c)(1)(vii)].

ISSUES

(i) Under 35 U.S.C. § 103(a), with respect to appealed claims 2, 3, 12, 14, 15, 17, 18, 20, 21, 24, 25, 28, 34, and 40, would one of ordinary skill in the art at the time of the invention have found it obvious to combine Ichihara and Feng to render the claimed invention unpatentable?

(ii) Under 35 U.S.C. § 103(a), with respect to appealed claims 4-8, would one of ordinary skill in the art at the time of the invention have found it obvious to modify the combination of Ichihara and Feng by adding the teachings of Yamanishi to render the claimed invention unpatentable?

(iii) Under 35 U.S.C. § 103(a), with respect to appealed claims 9-11, 13, 22, 23, 26, and 27, would one of ordinary skill in the art at the time of the invention have found it obvious to modify the combination of Ichihara and Feng by adding the teachings of Kowalski to render the claimed invention unpatentable?

FINDINGS OF FACT

The relevant facts are:

1. Appellants have invented an imaging system for sensing an object which includes an image sensor, a backing having a surface opposed to the sensor, and an image processor. The image processor, which includes a plurality of stat buffers, analyzes candidate edges for bounding regions and identifies shadows cast by the object on the backing as edges of a bounding region. (Spec. 6:7-17, 7:5-11, and 9:16-23).

2. Ichihara discloses (col. 7, ll. 48-51) the use of a "ten-key" for manually changing the threshold value for detecting the position of a shadow of a document.

3. Ichihara also discloses (col. 3, ll. 39-45 and col. 10, ll. 63-68) that the changing of the shadow position detecting threshold values may alternatively be performed automatically.

4. Ichihara discloses (col. 7, ll. 40-44 and 58-64 and col. 11, ll. 30-55) various "statistical measures" for calculating the variable shadow position detecting threshold values.

5. Feng discloses (col. 5, ll. 19-28 and col. 6, ll. 48-57) the automatic determining of a variable luminance threshold that is used in determining document edge boundaries.

6. Kowalski discloses (col. 4, ll. 56-61) the basing of the variable luminance threshold value calculation on a percentage of the maximum observed statistical measure.

PRINCIPLES OF LAW

In rejecting claims under 35 U.S.C. § 103, it is incumbent upon the Examiner to establish a factual basis to support the legal conclusion of obviousness. *See In re Fine*, 837 F.2d 1071, 1073 (Fed. Cir. 1988). In so doing, the Examiner must make the factual determinations set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 17 (1966). "[T]he examiner bears the initial burden, on review of the prior art or on any other ground, of presenting a *prima facie* case of unpatentability." *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). Furthermore,

> "'there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness' . . . [H]owever, the analysis need not seek out precise teachings directed to the specific subject matter of the challenged claim, for a court can take account of the inferences and creative steps that a person of ordinary skill in the art would employ."

KSR Int'l Co. v. Teleflex Inc., 127 S. Ct. 1727, 1741 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

ANALYSIS

I. The rejection of claims 2, 3, 12, 14, 15, 17, 18, 20, 21, 24, 25, 28, 34, and 40 based on the combination of Ichihara and Feng.

With respect to the 35 U.S.C. § 103(a) rejection of independent claim 40 based on the combination of Ichihara and Feng, Appellants' arguments in response assert a failure by the Examiner to establish a prima facie case of obviousness since a proper basis for the Examiner's proposed combination of references has not been established. After reviewing the disclosures of the prior art Ichihara and Feng references in light of the arguments of record,

we do not find Appellants' arguments persuasive in convincing us of any error in the Examiner's stated position.

Appellants contend that Feng's use of the standard deviation statistical measure to determine differences in pixel luminance would not be useful in determining the transition between a backing and a shadow cast by an object on the backing such as in the document edge detection system of Ichihara. According to Appellants (App. Br. 5-7; Reply Br. 4-6), because of the uniform luminance of the backing as well as the shadow cast by a document on the backing, the standard deviation statistical measurement used by Feng could not distinguish the transition between a backing and a shadow cast on the backing. In Appellants' view, therefore, the statistical measures described by Feng for determining document boundary edges could not be used in the system of Ichihara which determines document edges by utilizing variable luminance thresholds to detect transitions of a document shadow and a backing.

We do not find Appellants' argument to be persuasive since it is apparent to us from the Examiner's stated position (Ans. 3-4 and 11-13) that the Examiner is not suggesting the bodily incorporation of the standard deviation statistical measurement feature described in the document edge determining system of Feng into the system of Ichihara. Rather, it is Feng's teaching of *automatically* determining a variable luminance threshold that is used in determining document edge boundaries that is relied on as a rationale for the proposed combination with Ichihara's document shadow boundary disclosure. "The test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference.... Rather, the test is what the combined teachings of those

references would have suggested to those of ordinary skill in the art." *See In re Keller*, 642 F.2d 414, 425 (CCPA 1981) and *In re Nievelt*, 482 F.2d 965, 968 (CCPA 1973).

We also make the observation that, although we find no error in the Examiner's reliance upon Feng to supply a teaching of the *automatic* calculation of a variable luminance threshold value, ample evidence exists within the disclosure of Ichihara to suggest that such a teaching is cumulative to what is already disclosed by Ichihara. While Appellants' arguments direct attention to Ichihara's discussion (col. 7, ll. 43-51) of a ten-key numeric keypad for manually adjusting luminance threshold values, Ichihara also unambiguously discloses that such luminance threshold value variation can be performed *automatically*. For example, at column 3, lines 39-45, Ichihara discloses that the luminance threshold values for detecting the position of a shadow cast by a document can be manually varied "or raised automatically…." Similarly, at column 10, lines 63-68, Ichihara describes the luminance threshold value can be changed manually "or it may be conducted automatically…."

Further, we find that Appellants have not shown any error in the Examiner's identification (Ans. 3) of Ichihara's disclosure at column 7, lines 58-64 as corresponding to the claimed use of "one or more statistical measures" to calculate a variable threshold value. We would also point out that Ichihara also discusses a statistical measure in the form of a probability distribution function at column 7, lines 40-44 and column 11, lines 30-55. We also find no error in the Examiner's identification of registers R1-R4 identified in steps (F-7) through (F-13) and steps (P-5) through (P-8) in

Figures 7 and 8 of Ichihara as corresponding to the claimed contiguous "stat buffers."

In view of the above discussion and analysis of the disclosure of the Ichihara reference, we find that all of the elements of independent claim 40 are in fact present in the disclosure of Ichihara. Further, we find that Feng supplements Ichihara's teachings to establish the Examiner's prima facie case for the claims being obvious over the combination of those references. Therefore, it is our view that the Examiner did not err in concluding that the combination of Ichihara and Feng renders the cited claims unpatentable.

For the above reasons, since it is our opinion that the Examiner has established a prima facie case of obviousness which has not been overcome by any convincing arguments from Appellants, the Examiner's 35 U.S.C. § 103(a) rejection of independent claim 40, as well as dependent claims 2, 3, 12, 14, 15, 17, 18, 20, 21, 25, 28, and 34 not separately argued by Appellants, is sustained.

We also sustain the Examiner's obviousness rejection of separately argued dependent claim 24 which is directed to the feature of varying luminance threshold values in accordance with the size of the imaged object. Appellants' arguments (App. Br. 7) are not persuasive in convincing us of any error in the Examiner's finding that Feng's disclosure (col. 6, ll. 52-56) of detecting whether a document covers the end of the scanner satisfies the claimed limitations. We agree with the Examiner (Ans. 5 and 13) that, in Feng, the threshold value for determined a document with a size that has a detectable boundary will be different from a document with a size that covers or extends past the end of the scanner.

II. The rejection of dependent claims 4-8 based on the combination of Ichihara, Feng, and Yamanishi.

This rejection, in which the Examiner has applied the Yamanishi reference to the combination of Ichihara and Feng to address the background color feature of the rejected claims, is also sustained. Appellants' arguments in response rely on those arguments made against the Examiner's rejection of independent claim 40, which arguments we found to be unpersuasive as discussed *supra.*

III. The rejection of dependent claims 9-11, 13, 22, 23, 26, and 27 based on the combination of Ichihara, Feng, and Kowalski.

We sustain this rejection as well. As with the previously discussed rejection relying on Yamanishi, Appellants' arguments reiterate those made against independent claim 40 which we found to be unpersuasive.

We further find to be without merit Appellants' separate arguments with respect to dependent claims 26 and 27 which are directed to the feature of basing the variable luminance threshold value calculation on a percentage of the maximum observed statistical measure. We find no error in the Examiner's reliance (Ans. 10) on Kowalski (col. 4, ll. 56-61) as providing a teaching of such a feature.

Appellants' arguments (App. Br. 8) focus on the contention that Kowalski's disclosure is directed to color smoothing filters which would have no application to the boundary detection methods of Ichihara and Feng. As with our previous discussion with respect to the Examiner's obviousness rejection of independent claim 40, however, we do not interpret the Examiner's position as suggesting the bodily incorporation of the color

smoothing features described in the luminance-based filter of Kowalski into the system of Ichihara as modified by Feng. Rather, it is Kowalsi's teaching of using a percentage of a maximum observed statistical measure for calculating variable threshold values that is relied on as a rationale for the proposed combination with Ichihara and Feng.

CONCLUSION OF LAW

Based on the findings of facts and analysis above, we conclude that Appellants have not shown that the Examiner erred in rejecting claims 2-15, 17, 18, 20-28, 34, and 40 for obviousness under 35 U.S.C. § 103.

DECISION

The Examiner's 35 U.S.C. § 103 rejection of claims 2-15, 17, 18, 20-28, 34, and 40, all of the appealed claims, is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

KIS

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